



NOAA
FISHERIES
SWFSC

4.1: Communications and Data Access



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April 20, 2016

2 of 8 Terms of Reference questions are addressed:

Q7: All SWFSC products and publications are peer-reviewed.

Q8: The SWFSC ERD is developing dynamic approaches to communication.

Communications

- Peer Reviewed Publications
 - Stock assessments, STAR panel, etc
 - Top ecosystem journals
 - CalCOFI and CCIEA Synthesis Reports
- Art
 - Green Seas/Blue Seas public art installations
 - AMLR 25th anniversary museum exhibit
- The web
 - Revamped NOAA and SWFSC web sites
 - IOOS
 - Exploratorium
 - NOAA West Watch
 - J. Applied Ecology web blog participant
- News interviews and articles
- Local outreach events
 - Guest lectures at many schools and events
 - UCSC ISEE Inquiry Institute



Ray Troll paintings for green seas/blue seas art



Communications con't

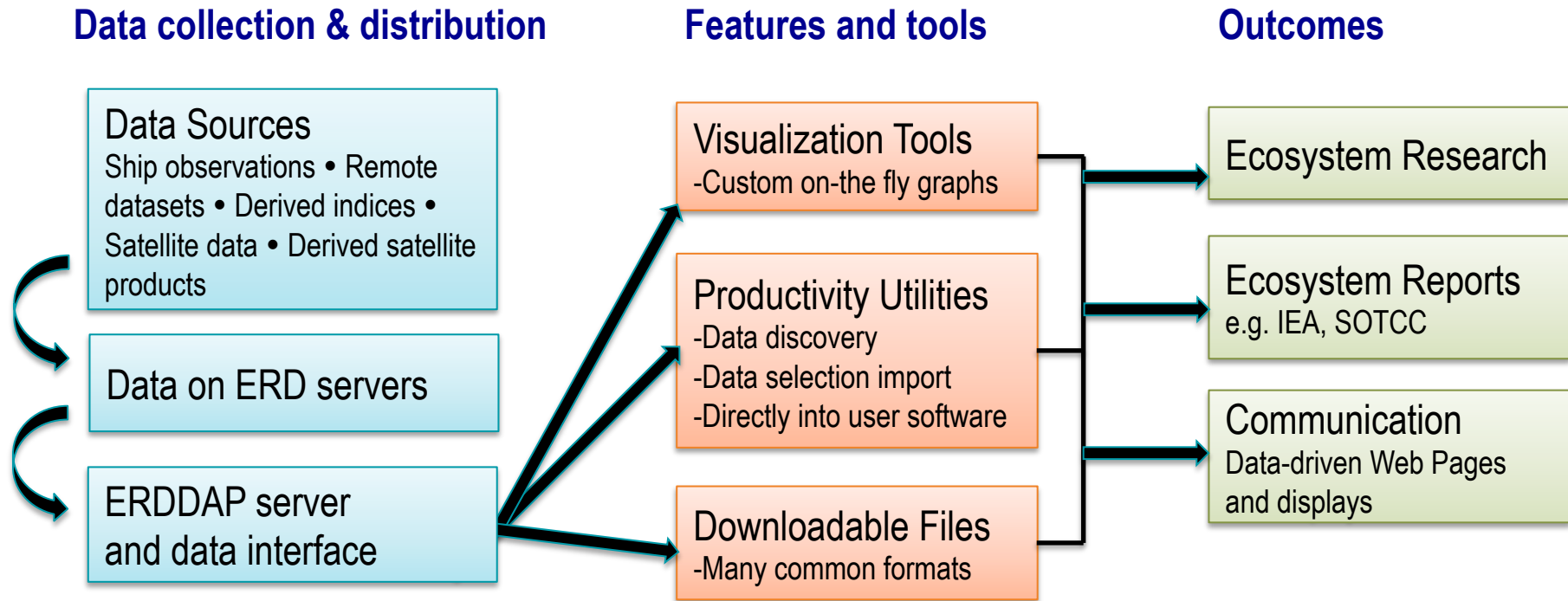
- Councils and Conventions
 - PFMC Science and Statistics Committee
 - CAMLR
- National and international Societies and Journals
 - Ecosystem science is shared at national and international meetings, e.g. AFS and PICES
 - Journal editors
 - Progress in Oceanography
 - Fisheries Oceanography
 - Oceanography
 - Deep Sea Research
 - PLoS One
 - Marine Ecology Progress Series
 - Service on committees and panels
 - PICES ISC
 - PICES working groups (multiple)
 - CLIOTOP task teams
 - IOCCG
 - POSEC
 - Unidata THREDDS Oversight Committee
 - OCG CF-netCDF SWG
 - California Ocean Protection Council Science Advisory Team



Data Searching, Access & Archiving

- PARR: Public Access to Research Results
 - ✓ Metadata access (due 1/31/2016): **DONE**
 - 100% compliant by providing metadata to InPort
 - ✓ Data access (due 1 May 2016): **DONE**
 - ERDDAP & CoastWatch
 - ✓ Data archiving (30% by 31 Dec 2016): **100% DONE**
 - ERDDAP pushes data to data.gov & noaa.data.gov

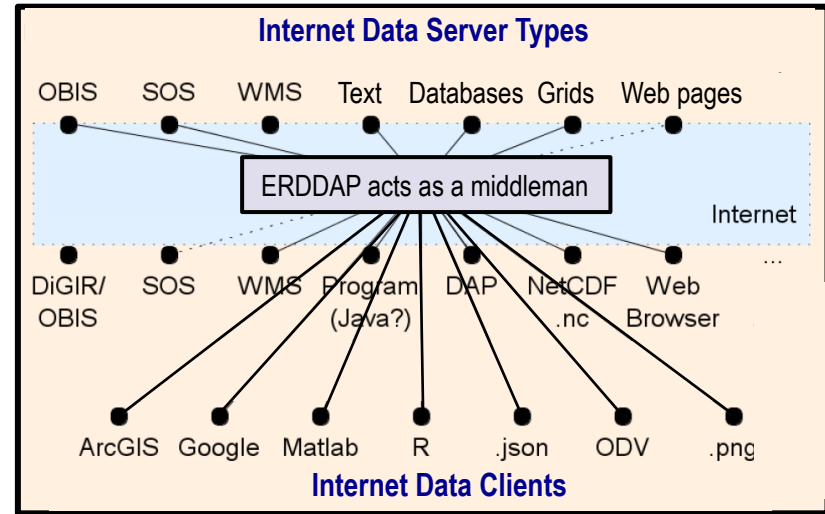
ERD provides a coherent program to support ecosystem research and communication



ERDDAP provides users with:

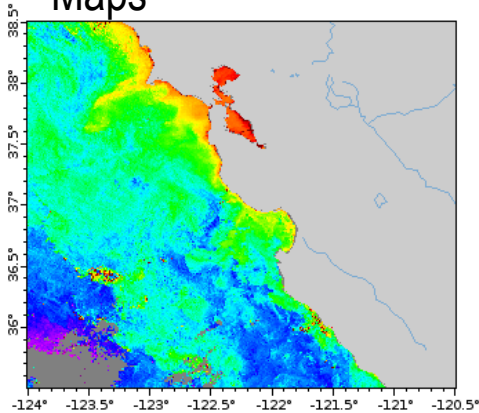
the data they want, at custom spatial and temporal ranges,
in the format that works with their preferred analysis tool

- UAF ERDDAP > 6000 datasets
- Serves data from local and remote servers
- It is a web application for humans
- It is a web service for computer programs
- Allows temporal and spatial subsetting
- Most common data and image formats are supported

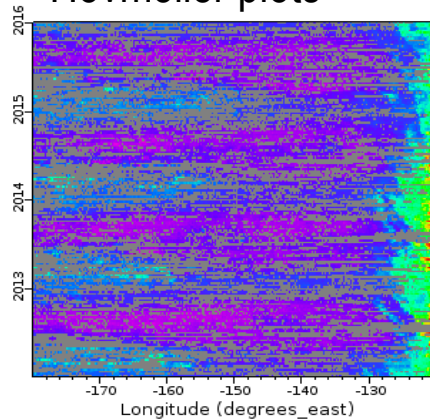


ERDDAP supports on-the-fly image generation through web pages that make it easy to generate custom images

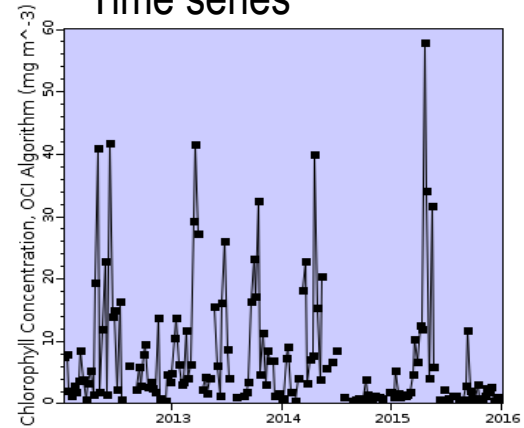
Maps



Hovmöller plots



Time series



Each plot is menu driven and then generated by a single URL

[http://coastwatch.pfeg.noaa.gov/erddap/griddap/erdVHNchla8day.png?chla\[\(2016-01-01T00:00:00Z\)\]\[\(0.0\)\]\[\(38.5\):\(35.5\)\]\[\(-124\):\(-120.5\)\]&.draw=surface&.vars=longitude|latitude|chla&.colorBar=|||.1|10|&.bgColor=0xffccccff](http://coastwatch.pfeg.noaa.gov/erddap/griddap/erdVHNchla8day.png?chla[(2016-01-01T00:00:00Z)][(0.0)][(38.5):(35.5)][(-124):(-120.5)]&.draw=surface&.vars=longitude|latitude|chla&.colorBar=|||.1|10|&.bgColor=0xffccccff)

Change **.png** to **.nc**, **.asc**, **.json**, **csv**... to download the data

Productivity tools address fisheries research needs

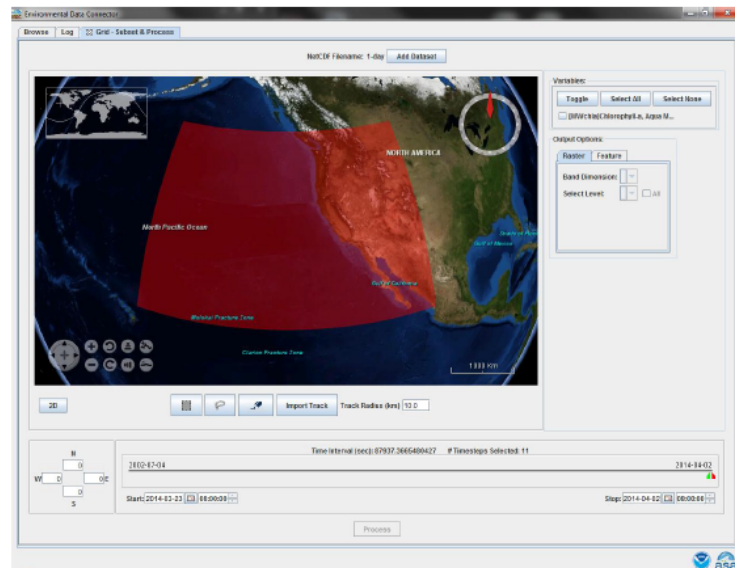
Environmental data connector:

Imports data from ERDDAP, OPeNDAP and SOS directly into analytical tools like ArcGIS, Matlab, R and Excel (ASA subcontract)

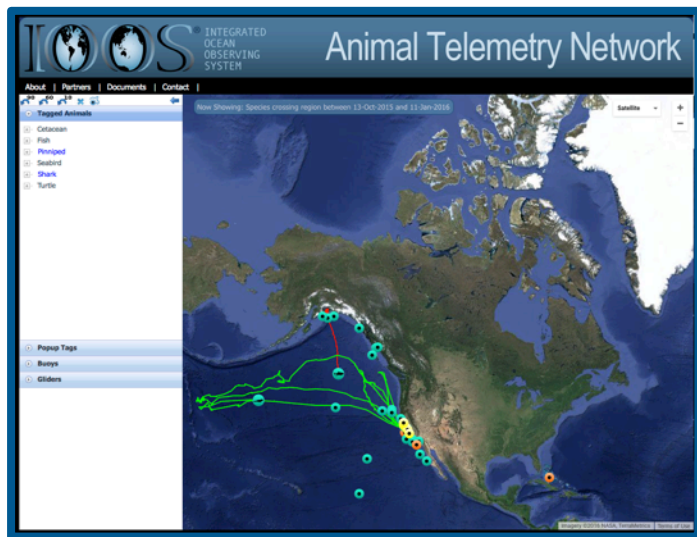
Xtractomatic routines:

Extracts environmental data from large satellite datasets that correspond to telemetry tracks and ship tracks

Environmental data connector

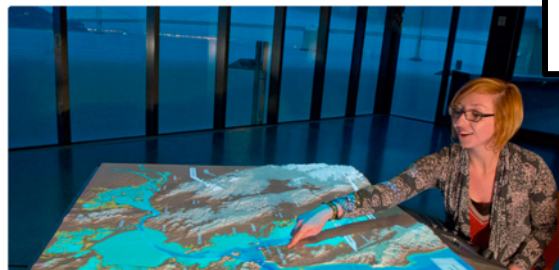


ERD data service drive data-driven displays



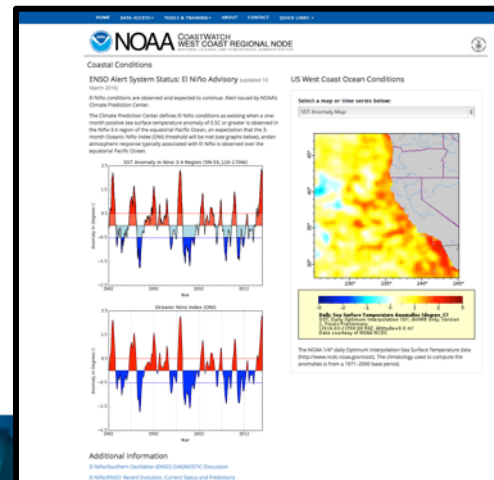
<http://oceanview.pfeg.noaa.gov/ATN>

exploratorium®



Visualizing the Bay Area

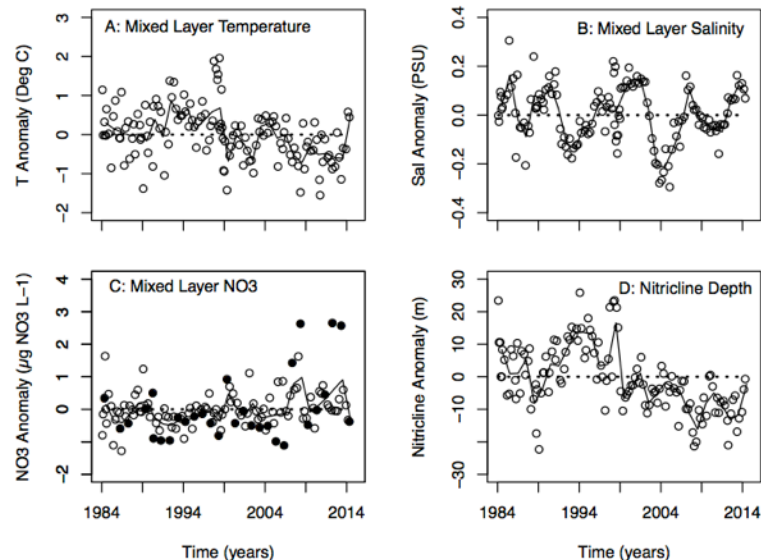
CoastWatch current conditions



CalCOFI: State of the CA current report is dynamically updated

Embedding URL calls in a script inserts most up-to-date data reports.

In this case, an R script for mixed layer data values with an ERDDAP backend.




CoastWatch provides outreach and products for SWFSC's data services

Integrated within SWFSC ERD since 2004

Engages with regional ecosystem scientists to provide needed satellite data and data products

Facilitates access and use of SWFSC's data resources

HOME DATA ACCESS TOOLS & TRAINING ABOUT CONTACT QUICK LINKS

 **NOAA** COASTWATCH
WEST COAST REGIONAL NODE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Providing near real-time satellite data for the coastal ocean

Environmental Data
View and download over 800 regional and global datasets, including satellite data, model output, and in situ measurements from field sensors.

[Data Catalog](#) [Coastal Conditions](#)

ERDDAP Data Server
The ERDDAP data server provides a simple, consistent way to subset and download environmental datasets in common file formats with options to make graphs and maps.

[Features](#) [Get Data](#)

Software
The Environmental Data Connector (EDC) and Xtractomatic data extraction scripts make it easy to discover and extract data from online servers and download them directly into ArcGIS, R, MatLab, and Excel.

[EDC](#) [Xtractomatic](#)

Strengths, Challenges, Strategies:

- **Strengths:**

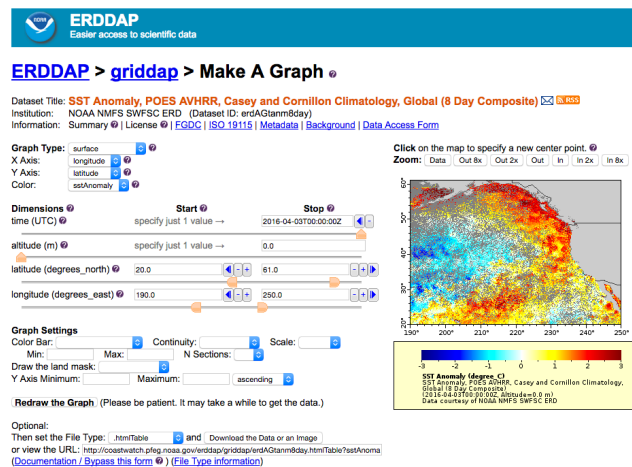
- ERD provides a strong ecosystem approach to science,
- Very strong publication record,
- Excellent data access,
- ERDDAP web services installed world wide at over 50 sites,
- Strong collaboration with NESDIS and other satellite services,
- ERDDAP and CoastWatch provide robust solution for PARR,

- **Challenges:**

- After over 10 years, NESDIS CoastWatch coordinator position is still a contractor,
- NOAA pushing PARR-imposed data availability timeline while still deciding on data standards,

- **Strategies:**

- Promote ERDDAP and CoastWatch (which work with InPort),
- Continue web delivery development for CalCOFI and CCIEA.



and thank you!

“All I can say is I don't know whether this is a late Christmas or an early birthday for me! This coastwatch.pfeg.noaa.gov/erddap system seems to be *fantastic*!”

-Dan E. Kelley
Professor and Graduate Coordinator
Oceanography Department, Dalhousie University
PO BOX 15000
Halifax, NS B3H 4R2



The screenshot displays an RStudio interface with several panes:

- Source Pane:** Contains R code for downloading and processing NOAA hydrocasts data from ERDDAP.
- Environment Pane:** Shows variables created during execution, such as `x`, `y`, `yr`, `yr_cruiseonm`, `yr_cruiseonms`, `yr_cruiseidm`, `yr_cruisetime`, and `pdf`.
- Console:** Displays the command history and output messages, including "Error in plot.window(...)" which occurs because no plot was generated.
- ERDDAP Search Results:** A table listing various datasets available through ERDDAP, filtered by the search term "calcofi".

R Code Snippet

```
1 load("castaves.Rda")
2
3 calcofidata.df<-read.csv(url(paste("http://coastwatch.pfeg.noaa.gov/erddap/tabledap/localcofiHydroCasts.csv?cst_cn
4 *cruiise_id,cruise,cruz_sta,dsta_id,cst_id,sta_id,quarter,sta_code,distance,date,year,month,julan_date",
5 *julian_id,time_ascii,latitude,latitude_degrees,latitude_minutes,latitude_hemisphere,longitude",
6 *longitude_degrees,longitude_minutes,longitude_hemisphere,rpt_line,st_line,ac_line,rpt_sta",
7 *st_station,ac_sta,bottom_d,ship_name,ship_code,data_type,order_occ,event_num,cruz_leg",
8 *orig_sta_id,data_or,cruz_num,intchl,intchl4,inc_str,inc_end,pst_lon,civil_t,timezone",
9 *wave_dir,wave_ht,wave_prd,wind_dir,wind_spd,barometer,dry_t,wet_t,weo,cloud_tpy,cloud_amt",
10 *visibility,sechcl,forelu,time&time=2012-07-19T00:00:00Z&time=2012-07-26T21:26:00Z")),header="TRUE")
11
12 pdf(file="Tsal_no3_nitdepth_anomaly.pdf",7,5,5)
13 allavtemp<-0
14 allavesal<-0
15 allaveno<-0
16 allavend<-0
17 w<-0
18 #### need to create climatological means (i'm going to do by month)
19 for (k in 1:12){
20   w<-subset(castaves.df,month==k,select=c(avetemp))
21   allavtemp[k]<-mean(w$avetemp)
22   w<-subset(castaves
23     allavesal[k]<-mean(w$avesal)
24   w<-subset(castaves
25     allaveno[k]<-mean(w$aveno)
26 }
```

ERDDAP Search Results

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	W M S	Title	Summary	FGDS, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	Dataset ID
	set	data	graph		CalCOFI Tows		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIflows
	set	data	graph		CalCOFI Cruises		M background	2.463	X		NOAA SWFSC	erdCalCOFICruises
	set	data	graph		CalCOFI Stations		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIstns
	set	data	graph		CalCOFI Moncesses		F I M background	2.463	X		NOAA SWFSC	erdCalCOFImoncess
	set	data			CalCOFI Tow Types		M background	2.463	X		NOAA SWFSC	erdCalCOFItowtpy
	set	data	graph		CalCOFI Egg Counts		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIEggcont
	set	data	graph		CalCOFI Egg Stages		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIEggstgsl
	set	data	graph		CalCOFI Fish Sizes		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIfishsiz
	set	data	graph		CalCOFI NOAA-Hydros		F I M background	2.463	X		NOAA SWFSC	erdNOAAhydros
	set	data	graph		CalCOFI Fish Counts		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIfshcnt
	set	data	graph		CalCOFI Larvae Sizes		F I M background	2.463	X		NOAA SWFSC	erdCalCOFILrvsz
	set	data	graph		CalCOFI Larvae Stages		F I M background	2.463	X		NOAA SWFSC	erdCalCOFILrvstg
	set	data	graph		CalCOFI SIO Hydrographic Cast Data		F I M background	2.463	X		UCSD SIO	sioocalcofiHydroCasts
	set	data	graph		CalCOFI SIO Hydrographic Bottle Data		F I M background	2.463	X		UCSD SIO	sioocalcofiHydroBottle
	set	data	graph		CalCOFI Egg Counts Positive Tows		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIEggcntpos
	set	data	graph		CalCOFI Fish Counts Positive Tows		F I M background	2.463	X		NOAA SWFSC	erdCalCOFIfshcntpos